



## Clinical Characteristics and Treatment of Acute Bacterial Destructive Pneumonia in Children

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**Abstract:** The data of examination and treatment of 176 sick children with acute bacterial destructive pneumonia are presented. Another approach to the treatment of inflammatory infiltrates of the lung has been tested, based on the introduction of an antibiotic through the skin-intra-lung into the lesion. A differentiated method of drainage of the pleural cavity was used.

**Key words:** children, acute bacterial destructive pneumonia, empirical therapy, thoracocentesis, microflora.

**Relevance.** Despite significant success in the diagnosis and treatment of acute bacterial destructive pneumonia (ABDP), it remains a serious disease in young children [2,7,11,16,22,25]. Over the past decade, there has been a gradual displacement of staphylococcus from etiological agents due to a wide range of gram-negative flora, as well as its associations [1,3,4,8,12,15,21,26].

In recent years, the main efforts of pediatric surgeons and pediatricians have been focused on studying the nature of the microflora and the choice of antibacterial therapy, studying microcirculatory hemostasis, the immune system - for immunocorrection, as well as other treatment methods, such as drainage of the pleural cavity. However, the mortality rate from destructive pneumonia, according to literature data, ranges from 3 to 15% [3,6,7,9,13,18,23].

Advances in surgical and medical treatment of ADHD have had some success, but they need further improvement. There is a need to develop and introduce into practice more gentle and effective methods of drainage treatment of acute respiratory depression in childhood [5,6,7,10,14,17,19,20,24,27].

**Material and methods.** This work is based on examination and treatment data of 176 patients with ADHD. When studying the clinical and radiological picture of the disease, in each specific case we

identified several clinical groups. The majority of patients were children with exudative pleurisy - 31.3% and pyopneumothorax - 31.8%. The incidence of pleural complications was significantly higher in children under 3 years of age – 78.4%. The main contingent of patients were children of the first three years of life, including: 30.7% - under the age of one year, from one year to three years made up the majority (47.7%) of the observed patients.

Among the examined patients, there were slightly more boys (54.3%) than girls (45.7%). It should be noted that in 83.7% of patients, acute bacterial destructive pneumonia occurred against the background of various concomitant diseases and complications, which were mainly observed in children of the first three years of life. In infancy, common concomitant diseases were anemia (90.3%), rickets (47.3%), malnutrition (30.2%), exudative diathesis (8.9%), etc. It is important to emphasize that 94% of children a history of acute viral infections and pneumonia was noted. To solve our problems, clinical, radiological and laboratory research methods were used.

**Results.** When studying the etiological structure of OBDP obtained during bacteriological examination, we used two indicators: the frequency of detection of the pathogen from among all those examined and from the number of positive results. sowing *Staphylococcus* was most often cultured - in 49 cases out of 152 studies, which amounted to 32.2%. This figure rises to 62% of positive samples (79). In second place is *Pseudomonas aeruginosa* - 9.8% and 18%, respectively. Associations of bacteria were noted, most often *staphylococcus* with *Pseudomonas aeruginosa* and *Escherichia coli*.

Thus, traditional methods of bacteriological study of the site of destruction, due to the low frequency of registration of pathogens and the duration of the study, do not allow the initiation of targeted, timely antibacterial therapy. In addition, it is often impossible to obtain material for the tank. culture from the focus of the pathological process (inflammatory infiltrate, pneumothorax, bullae, fibrinous pleurisy). Considering that antibacterial therapy is urgent, it would be rational to prescribe antibiotics in a targeted manner, taking into account the pathogen and its sensitivity to antibiotics.

However, fulfilling this requirement at the initial stages of the disease is not realistic; therefore, at the initial stages we prescribed antibiotics based on staphylococcal etiology, either gram-negative, less often mixed. For the treatment of ADDP, antibiotics were used that have an antistaphylococcal effect and broad-spectrum antibiotics - 3-4 generation cephalosporins (ceftriaxone, rocephin, cefepime, etc.), which clinically gave a positive result from the first days of treatment.

As the results of bacteriological studies were obtained, antibiotics were prescribed taking into account the sensitivity of the isolated pathogens of the pathological process. A decrease in intoxication, normalization of temperature, appetite, a decrease in the amount of contents from the drainage tube and during puncture, improved breathing, negative results of bacteriological studies indicated the beginning of remission. Quick identification of the causative agent of the disease allows you to select an antibiotic to which this type of bacteria is sensitive and immediately begin antibacterial treatment of patients with acute respiratory disease.

The choice of antibiotics allows immediate initiation of antibiotic therapy by injection into the lesion. We used intrapulmonary administration of antibiotics in the infiltrate zone in 31 children. We chose the antibiotic after identifying the causative agent of the disease and carried out targeted antibiotic therapy. With lobar infiltration, the use of intrapulmonary antibiotics as part of a complex of treatment

measures made it possible to achieve recovery in 93.5% of patients (29 patients). Pneumothorax was observed in 2 patients (5%).

Intrapulmonary administration of antibiotics makes it possible to create a high concentration in the area of inflammation, prevent the development of severe pleural complications and, in some cases, contribute to the abortive course of the pathological process. In general, the method of intrapulmonary administration of antibiotics, used according to indications, is a very effective preventive measure that prevents the development of purulent pleural complications.

In pulmonary-pleural forms of APDP, the main goal of drainage treatment is to remove air and fluid from the pleural cavity and straighten the lung to prevent its re-collapse. Thoracentesis with drainage of the pleural cavity was performed in 72 patients. In the present study, patients were divided into two groups according to the method of drainage treatment in order to determine the comparative effectiveness of the new and traditional approaches to drainage treatment.

Traditional drainage, including trocar drainage, is usually introduced urgently, without taking into account the location of the lesion; as a rule, along the VI-VII intercostal space, mid-axillary line, and the differentiation approach involved the introduction of trocar drainage at the level of the lesion, taking into account its location. Patients who underwent thoracentesis with drainage of the pleural cavity using trocar drainage using the traditional method comprised group I (17 children). Pyopneumothorax and pneumothorax were observed in 15 patients (88%).

Pyothorax in 2 patients (12%). When treated with trocar drainage, the patients' condition improved faster and the lungs expanded, which was observed in 6 patients (35%). However, in 9 children (53%), the favorable clinical course was not accompanied by lung expansion. They noted a gradual, slow straightening. In 7 patients the lung expanded slowly, after 2-3 weeks. In general, the use of trocar drainage made it possible to achieve recovery in 16 patients (94%). 1 patient (5%) from this group died. The length of stay of patients in the hospital was  $34.1 \pm 0.8$  bed days. The thoracentesis hole on the chest wall healed  $27.2 \pm 1.1$  days after removal of the drainage.

For patients of group II - 55 children, we used the method of differentiated drainage of the pleural cavity. Pyopneumothorax was observed in 48 children (87%), pyothorax in 7 children (13%). When treated with a differentiated method, a rapid improvement in the condition with expansion of the lung in the first hours and days was observed in 47 patients (87%), in 6 patients (11%) after a few days, only in 1 child (2%) the lung expanded in the later stages of treatment, after applying the second drainage 1-2 intercostal spaces above the insertion site of the first drainage. The length of stay of patients in the hospital was  $25.2 \pm 0.5$  bed days.

The thoracentesis wound on the chest wall healed after  $18.2 \pm 6$  days. 2 children (3.6%) out of 55 patients in this group died. The cause of the unfavorable cases here cannot be associated with the use of this method (in all the deceased, the lung remained expanded until death. In all cases there was progressive septicopyemia).

**Conclusion.** Conducting targeted antibiotic therapy for various forms of acute destructive pneumonia can prevent the disease from becoming chronic and obtain a more pronounced clinical effect compared to traditional treatment.

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